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BRITISH MUSEUM (NATURAL HISTORY)

# INSECTS OF SAMOA

## AND OTHER SAMOAN TERRESTRIAL ARTHROPODA

## PART VIII. TERRESTRIAL ARTHROPODA OTHER THAN INSECTS

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### ISOPODA TERRESTRIA

By HAROLD G. JACKSON, D.Sc.

### SCORPIONOIDEA

By P. A. BUXTON, M.A.

### PSEUDOSCORPIONES

By A. KÄSTNER

AND

### ACARINA

By STANLEY HIRST

WITH TWO PLATES AND THIRTEEN TEXT-FIGURES



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# INSECTS OF SAMOA
## AND OTHER SAMOAN TERRESTRIAL ARTHROPODA

Although a monograph, or series of papers, dealing comprehensively with the land arthropod fauna of any group of islands in the South Pacific may be expected to yield valuable results, in connection with distribution, modification due to isolation, and other problems, no such work is at present in existence. In order in some measure to remedy this deficiency, and in view of benefits directly accruing to the National Collections, the Trustees of the British Museum have undertaken the publication of an account of the Insects and other Terrestrial Arthropoda collected in the Samoan Islands, in 1924-1925, by Messrs. P. A. Buxton and G. H. E. Hopkins, during the Expedition of the London School of Hygiene and Tropical Medicine to the South Pacific. Advantage has been taken of the opportunity thus afforded, to make the studies as complete as possible by including in them all Samoan material of the groups concerned in both the British Museum (Natural History) and (by courtesy of the authorities of that institution) the Bishop Museum, Honolulu.

It is not intended that contributors to the text shall be confined to the Museum Staff or to any one nation, but, so far as possible, the assistance of the leading authorities on all groups to be dealt with has been obtained.

The work will be divided into eight "Parts" (see p. 3 of wrapper), which will be subdivided into "Fascicles." Each of the latter, which will appear as ready in any order, will consist of one or more contributions. On the completion of the work it is intended to issue a general survey, summarising the whole and drawing from it such conclusions as may be warranted.

E. E. AUSTEN,
*Keeper of Entomology.*

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# INSECTS OF SAMOA

## Part VIII.

## TERRESTRIAL ARTHROPODA OTHER THAN INSECTS

## Fasc. 1

## ISOPODA TERRESTRIA

By Harold G. Jackson, D.Sc., Birkbeck College, University of London

(With 2 Plates)

### 1. Introductory

Up to the present two genera (including four species) of Woodlice have been recorded from the Samoan Islands. The small collection described below, which has been put into my hands by the kindness of Dr. P. A. Buxton, enables me to add four new records and a new species. I have taken the opportunity to figure and redescribe two of the old species which were only briefly described, without figures, by Budde-Lund. The collection of the Bishop Museum, Honolulu, has been placed at my disposal in addition to the collection of Buxton and Hopkins, but, as it consists entirely of dried specimens, it is of little value except for the bare recording of well-known species.

The following Woodlice have been already recorded from the Samoan Islands, all by Budde-Lund (1885) :

*Paraphiloscia gracilis* (B.L.).
*Spherillo erinaceus* B.L.
,, *montivagus* B.L.
,, *testudinalis* B.L.

Of these, *Paraphiloscia gracilis* (B.L.) and *Spherillo testudinalis* B.L. are represented in the present collection.

The undermentioned species are recorded for the first time :

*Rhyscotus ortonedae* B.L.
*Alloniscus brevis* B.L.
*Ligia exotica* Roux.
,, *perkinsi* (Dollfus).
*Spherillo spicatus*, sp. n.

## 2. Distribution

The most remarkable feature of the Woodlice of the Pacific Islands is the great preponderance of members of Budde-Lund's sub-family Spherilloninae. This sub-family was established (1904) on three characters, namely, the form of the bristles on the inner endite of the maxillula, the molariform lacinia mobilis of the mandible and the position of the eyes on the lateral margin of the head. Only the first of these characters stands examination.

Wahrberg (1922) has pointed out that the molariform type of mandible is also found in *Cubaris*, and that a *Spherillo* deprived of the inner endite of its maxillula is indistinguishable from a *Cubaris*. The eye character is so variable that it is valueless. No other common character can be found.

Budde-Lund, therefore, in reality founded this sub-family on a single character, being evidently impressed by the fact that the forms possessing it were restricted to a definite area.

A character which divorces genera so obviously related as *Spherillo* and *Cubaris*, and makes such strange bedfellows as *Paraphiloscia* and *Spherillo* can have no taxonomic value, but its relation to the distribution of these forms presents a fascinating problem. Very few forms with slender penicilli on the maxillula live within the area of the Pacific and Indian Oceans, and very few with stumpy penicilli outside it. Of the latter, I know only *Philoscia* (*Benthana*) *minima* (Dolf.), of Spain and Portugal, although others may exist. It seems therefore to be a character of the same order as melanism in the races of man established in hot climates, which may possibly be due to some environmental influence, but is not fundamental enough to separate otherwise closely related forms by the relatively wide gap of a sub-family. *Paraphiloscia*, for example, is obviously in every respect a typical "Philoscia" and should have no more than sub-generic rank, and *Spherillo* is a genus, as Wahrberg pointed out, which stands naturally by the side of *Cubaris* in the Armadillidiinae.

There seems therefore no justification for retaining the sub-family Spherilloninae, and in any rational classification of the Terrestrial Isopods one must assume that this particular form of maxillula has arisen independently more than once.

The four species outside the "Spherilloninae," which are recorded here, include *Ligia exotica* and *Alloniscus brevis*, which are already known to be widely distributed in the Pacific. A single *Rhyscotus* was found, which I was unable to distinguish in any respect from *R. ortonedae* of Ecuador. This distri-

bution is remarkable, but when one takes into account how little is known of this peculiar genus, and that the Crustacean fauna of the west coast of South America is closely linked with the Southern Pacific fauna, one hesitates to commit oneself to any definite statement about it.

The occurrence of *Ligia perkinsi* on Namua is much more remarkable. It is unnecessary to deal with the past history of this species, since I have done so in a recent paper (1927). Up to the discovery of this material (1 ♂ and 2 ♀) " on rocks on shore," it has been assumed that *L. perkinsi* is a terrestrial and mountain form peculiar to the Hawaiian Islands. Its claim to that distinction must be disallowed, although I have reason to believe that it will be found at high altitudes in Samoa as well as on the shore. Four explanations might be brought forward to account for this distribution. (1) *L. perkinsi* is a widely spread but uncommon form on the Pacific Islands, and is yet to be recorded from other localities; (2) it is a growth, non-breeding or other stage, of *L. exotica*; (3) it has arisen independently in the two localities; (4) it has been transported by human agency.

Of these possibilities the two last may be dismissed as improbable. It should be possible, by the examination of a large number of specimens of *L. exotica* of all sizes, to test the second. As a matter of fact no "*perkinsi*" stage was present among the abundant material examined by me, and the specimens of *L. perkinsi* that I have seen have every indication of maturity; the male also of *L. perkinsi* is larger than many males of *L. exotica*, which already possess the characteristic process on the propos of the first leg. On the available evidence, therefore, I feel bound to conclude that *L. perkinsi* is a distinct species, and that the explanation of its occurrence here is the first one stated above.

## 3. Description of Material

### Family: ONISCIDAE.

### Sub-family: Armadillidiinae.

#### 1. Spherillo testudinalis B.L.

(Plate II, figs. 26–29.)

Synonymy in Budde-Lund (1908).

*Spherillo testudinalis*, Searle (1914).

*Occurrence.*—Apia, Upolu Island, v.1924, and " under stones," ii.1925. The

following records are from the Bishop Museum material. Tutuila, 900 ft. (Kellers) iv.1918 ; Tau, 20.ii.1926, and Ofu, 27.ii.1926, Manua (Judd).

*Remarks.*—Redescribed by Budde-Lund in 1908, and well figured. Searle adds nothing to this description, but confirms Budde-Lund's conjecture that *Cubaris pacifica*, Borradaile, is synonymous with this species. Since the characteristic notch on the first somite for the reception of the second somite when rolled up is not well shown or described, I figure it, with the mouth-parts. The brood pouch of the female is as described under *S. spicatus* below.

The species is very widely distributed in the Pacific and Indian Oceans.

## 2. Spherillo spicatus, sp. n.

(Plate I, figs. 1–21 ; Plate II, fig. 25.)

Male and female specimens examined.

*Length*, ♂ 8 mm., ♀ 10 mm. ; *breadth*, ♂ 4 mm., ♀ 5 mm.

*Shape*, oblong-oval. *Surface* smooth, produced into great spines.

*Head.**—Eyes small, about 12 ocelli, convex, well within marginal line. Frontal line drawn vertically upwards at each side, to form pointed ear-like lateral lobes. Occiput provided with transverse row of four long spines. Occipital groove covered by carapace fold. Marginal line forms hind margin of head and runs beneath eye, where it becomes flattened out and merged with edge of frontal shield. Frontal line strongly raised into ridge much surpassing vertex. Profrons forms with postfrons wide shield. Frontal area slightly convex in centre, bounded laterally by thick margin, which probably represents antennary tubercle fused with frontal shield. Frontal lamina obscure in middle ; antennary socket well set out from face, and provided ventrally with rounded tubercle. Clypeus not protruded far from face ; lobes long, narrow and pointed. Labrum membranous. Gena deeply excavated under marginal line, so that eye projects laterally on shelf ; produced downwards beneath genal fossa, lower than mandible ; genal fossa and groove shallow.

*Thorax.*—I. Collar line double, turning forward at each side almost at right angles, so that two sides are nearly parallel, hind edge slightly convex ; posterior margin curved forwards, posterolateral angles rectangular, lateral margin thin

* The nomenclature employed is that proposed by the author in " The Morphology of the Isopod Head " (1926). Several points in this and the following descriptions are common to other genera of the same type, but as the application of the above paper to other Terrestrial Isopods is not yet published, they are given in full.

and turned up, posterolateral margin grooved; 7 spines (6 in posterior row, 1 anterior and median). The anterolateral edge of each succeeding somite is deeply cut away, so that III, IV and V terminate laterally in an acute point, VI and VII in an obtuse point. Eight spines in transverse row on each; lateral spines of each row on coxal plate and directed outwards. Pronotum about $\frac{1}{4}$ of dorsal surface; articulating area reaching to lateral margin of somite. Somite II has small internal anterior articulating process.

*Abdomen.*—I, completely covered by last thoracic; II, very narrow; epimera of III, IV and V drawn diagonally back, their inner edges in V are almost parallel, each has lateral spine and IV and V have a median spine; telson broader than long, coarctate, posterior border curved but more or less rectangular with sides, long median spine.

*Appendages.*—*Antennula* minute, segments subequal.

*Antenna.*—Moderately stout; proportions to body, ♂ $\frac{4.5}{8}$, ♀ $\frac{5}{10}$, fifth segment longer than flagellum, which is biarticulate, proximal segment $\frac{1}{4}$ distal, which has terminal bristle, no carinae, grooves nor spines.

*Mandibles.*—Right with small flat lacinia mobilis, three penicilli between it and setose plume; left with powerful molariform lacinia mobilis and three penicilli (1 free, 2 on setose pad) between it and setose plume.

*Maxillula, maxilla* and *maxillipede* typical of the genus.

*Pleopoda.*—General form shown in figures. 1st exopod absent in female, tracheae in 2nd and 3rd and rudimentary tracheae in 4th; in male, tracheae in 1st and 2nd.

*Uropod.*—Protopod broad, narrowing posteriorly, fold-like cover over base of exopod; exopod comparatively long, considerably surpassing protopod; endopod nearly as long as telson, carina on dorsal side, reaching about as far back as tip of exopod, tipped with two stout bristles.

*Colour* (in spirit).—Yellow mottled with violet-brown; on each side of mid-line heavier bands of pigment; abdomen and telson more heavily pigmented. Head and limbs lightly pigmented.

*Occurrence.*—Malololelei, Upolu, 2000 ft. 25.iv., and vi.1924; the species was common, on rocks on the ground and on tree-trunks, in rain forest.

*Type* in British Museum (Natural History).

*Remarks.*—The thoracic sterna in the pregnant mother are entirely membranous from the first to the fifth somites, and the integument in the pouch is prolonged into long, hollow, finger-like processes, which lie, like packing, between

the embryos. The sterna of the last two somites are easily separable in the mid-line. The spines are longer and more slender in the male than in the female.

The above species takes its place with the other spiny species of *Spherillo* previously described, but is clearly distinct from them. *S. erinaceus*, which has been recorded from Upolu, differs from it entirely in the arrangement of the spines, the telson, the colour and other smaller points.

### 3. Spherillo erinaceus B.L.

*Distribution.*—" Island Upolu " (Budde-Lund).

### 4. Spherillo montivagus B.L.

*Distribution.*—" Australia. Several specimens have been taken in some of the Australian Islands: Upolu; Samoa; Ninafoon, three specimens from the intestines of Megapodius Prellchardi: Ruk " (Budde-Lund, 1904).*

Neither of these species is represented in the present collections: both were recorded by Budde-Lund from the island of Upolu.

## Sub-family: Rhyscotinae.

### 5. Rhyscotus ortonedae B.L.

One specimen was found at Apia, Upolu, 30.viii.1925. The species was described and figured by Budde-Lund in 1908. The type locality is Ecuador, but members of this genus are very small and easily elude observation, and the distribution will probably prove to be more extensive than is at present known. A species occurring in the Galapagos Islands has been described by Van Name (1924) under the name *R. laxus*, which I am unable to distinguish from this species by the description, and may easily prove to be synonymous with it.

## Sub-family: Oniscinae.

### 6. Alloniscus brevis B.L.

Budde-Lund, 1885, p. 226; 1908, p. 298.

(Plate II, figs. 30–37.)

Male and female specimens examined.

*Length*, ♂ 8 mm., ♀ 8 mm.; *breadth*, ♂ 4 mm., ♀ 4·5 mm.

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* The island is doubtless Niuafoou, an outlier of Tonga; and the bird is *M. pritchardi*, Gray.—P. A. Buxton.

*Shape*, oblong-oval. *Surface* smooth, but covered with prominent scales in transverse rows.

*Head.*—Eyes moderate, about 22 large ocelli. Lateral lobes form prominent tubercle in front of eyes. Median lobe indicated by bulbous triangular projection from frontal area. Occipital groove covered above by carapace fold. Marginal line forms hind margin of head, continuous beneath eyes, running forwards and downwards under antennal socket. Antennary tubercles indistinctly indicated. Frontal line indicated by slightly raised line, on which is a row of small tubercles. Profrons slightly bulbous medianly, coarsely tuberculated and pigmented. Supraantennal line linear between antennal sockets, fused with their upper border, joining marginal line on each side. Postfrons bulbous, with granular surface, free from pigment. Frontal lamina not distinctly demarcated from postfrons; antennary sockets not prominent and defined above by supraantennal line. Clypeus not very protuberant, lateral processes long but narrow, not attaining to gena. Gena extensive, not marked by fossa or groove.

*Thorax.*—First tergite, hind border curved forwards; first to third tergites not sinuate; VI and VII sinuate, posterolateral angles far drawn back but not sharply; coxal plates marked by deep grooves on II, III and IV in female only. Collar line single.

*Abdomen.*—Not abruptly contracted; III, IV and V postero-lateral angles well drawn back, inner edges of epimera parallel in V and nearly so in others, drawn back as far as, or only slightly less than, tip of telson. Telson nearly twice as wide as long, triangulate, sides nearly linear, obtusely acuminate, sulcate at tip.

*Appendages.*—*Antennula* minute, terminal bunches of bristles.

*Antenna.*—Setose, no spinous processes, moderately stout; flagellum equal in length to 5th segment, triarticulate, segments equal. Proportions to body, ♂ $\frac{3 \cdot 5}{8}$, ♀ $\frac{3}{8}$.

*Mandibles.*—Right, toothed lacinia, two stout, very setose penicilli (1 free, 1 on setose pad); left, powerful toothed lacinia, three stout, very setose penicilli (1 free, 2 on setose pad).

*Maxillula.*—Outer endite 5+4, all simple: inner endite, 2 moderately short brushes, terminal long single bristle.

*Maxilla.*—Both endites very hairy.

*Maxillipede.*—Endopod short and stout, dense brushes of bristles at *a*, *b* and *c*; endite very setose; base densely covered with curved bristles.

*Peraeopoda.*—Meros and carpos richly supplied on inner side with large bristles on 1st to 6th legs in male. Less spiny in female.

*Pleopoda.*—Penes stout and short, with outward turned points; exopods large and membranous, with expanded lateral branchial portion sharply separated from rest; stout spines on margin in male.

*Uropod.*—Protopod massive, hardly longer than telson, well-marked inner portion bearing endopod; exopod conical and short, little longer than protopod; endopod short, reaching about one-third up exopod, with terminal bristles.

*Colour.*—On mid-line and over coxal plates a stripe of slaty grey; on each side of mid-line and on coxal plates, yellow mottling; under surface and appendages white with only very sparse pigment.

*Distribution.*—" Indes "; Comoro Island (Indian Ocean).

*Occurrence.*—Tutuila, Leone Road (Judd), 29.iii.1926; Upolu, Apia (Wilder) 1.ix.1925. (Both from Bishop Museum collection.)

*Remarks.*—This species is doubtfully separable from *A. oahuensis* B.L., which differs from it hardly at all except in breadth and tip of telson. If the species are identical, and of general distribution in these oceans, the above name, which dates from 1879, has priority and, in spite of its local application, must be preferred.

### 7. Paraphiloscia gracilis (B.L.).

*Philoscia gracilis* B.L. (1885), p. 220.

*Pseudophiloscia gracilis* B.L. (1904), p. 42; B.L. (1912), p. 372.

(Plate II, figs. 38–49.)

Male and female specimens examined.

*Length*, ♂ 6 mm., ♀ 8·5 mm.; *breadth*, ♂ 3 mm., ♀ 4 mm.

*Shape.*—Narrow elongate oval. *Surface.*—Very smooth and shining, scales very minute, with distinct bloom (spirit specimens).

*Head.*—Eyes moderate, 23–25 ocelli, laterally placed. Lateral lobes absent. Median lobe absent. Occipital groove hidden dorsally by carapace fold. Postorbital pits absent. Marginal line reaches posterodorsal margin of head, runs forward under eye and down to join supraantennal line. Antennary tubercle not developed. Frontal line absent, but front of head is bulged out where it is usually found, and seen from above its outline is evident. Profrons continuous with vertex. Supraantennal line low, slightly curved downwards between antennal sockets, fused with upper border of sockets, laterally becoming

free and joining marginal line. Postfrons very restricted by low supraantennal line. Frontal lamina not distinctly demarcated from postfrons in mid-line ; antennary sockets not prominent and masked above by supraantennal line. Clypeus protuberant, distinctly marked off by groove from face, lateral processes nearly as wide as clypeus and very long, completely separating frontal lamina from upper margin of mandible. Gena extensive and not marked by fossa or groove, extending forwards laterally to meet lateral processes and form a sort of tubercle.

*Thorax.*—Hind borders of first four somites transverse, fifth and sixth very slightly curved, seventh slightly sinuate. Groove on lateral edge of each defines inner margin of pore field, in which cutaneous glands open. Collar line single.

*Abdomen.*—Very abruptly contracted, rather convex. Hind margin of each segment transverse and straight. Second only a little less wide than the others. Each segment provided with small, sharp, little drawn back, postero-lateral processes. Telson free laterally from last somite, broader than long, hind margin triangulate, more or less straight sides, point little drawn out but acute, slightly sulcate at tip.

*Appendages.*—*Antennula* moderate ; third segment rather long and slender.

*Antenna.*—Long and slender, no spines and barely setose ; flagellum equals fifth segment, triarticulate, proximal segment equals combined distal ones, which are short, second longer than third, which has long fine terminal bristle as long as second. Proportions to body, ♂ $\frac{4{\cdot}5}{6}$, ♀ $\frac{5{\cdot}5}{8{\cdot}5}$.

*Mandibles.*—Right with strong incisor process, lacinia mobilis unchitinised but broad and strong, two penicilli between it and large branched setose plume ; left with strong incisor process, lacinia mobilis chitinised and massive, three penicilli (2 on setose pad, 1 free) between it and large branched setose plume.

*Maxillula.*—Outer endite 4+5, all simple : inner endite without terminal spine ; plumes short, broad and bushy.

*Maxilla.*—Narrow, constricted at base ; inner endite moderately small and setose.

*Maxillipede.*—Endopod small and scarcely longer than endite, close bunches of many bristles at *a* and *b*, a few small bristles at *c* ; endite densely setose at distal end.

*Peraeopoda.*—Propodus long and very slender, but otherwise without very distinctive characters.

*Pleopoda.*—♂, II, postero-medial border of exopod greatly drawn out, III

and IV less drawn out, V very acute ; endopod of II filiform, reaching as far as most posterior point of V in mature specimen : ♀, I, very deeply incised laterally, V with short but acute postero-medial angle.

*Uropod.*—Protopod not overlapped by telson, deeply grooved laterally ; exopod slender and conical, about twice as long as base ; endopod long and very compressed laterally, tip reaches about halfway up exopod, actual length $\frac{2}{3}$ exopod.

*Colour* (in spirit).—Violet-brown, speckled on a golden yellow ground ; mid-line almost free from pigment ; fifth trunk somite a nearly uniform dark brown, giving the whole animal a striking appearance ; dark brown stripes down each side of abdomen ; on each side of seventh trunk segment on posterior border, a triangular white patch. Under surface pale, lightly mottled with brown.

*Distribution.*—" Insula ' Upolu ' " (B.L.).

*Occurrence.*—Malololelei, Upolu, Samoa, 2000 ft., vi.1924. The following records are from the Bishop Museum material : Tutuila, 900 ft. (Kellers), iv.1918 ; Ofu, Manua (Judd), 27.ii.1926 ; Savaii, Safune (Bryan), 8.v.1924, Rain forest, 2000–4000 ft. ; Savaii, Salailua (Bryan), 23.v.1924.

*Remarks.*—The above description differs from that of Budde-Lund (1885, p. 220) as regards the form of the telson, which is there described as " apice obtusiore," while I describe it as acute. Budde-Lund's description was drawn up from a single specimen and is therefore open to doubt, since the tip of the telson easily becomes turned down so as to appear obtuse. The telsons of the allied species *P. lateralis*, *P. angustissima* and *P. brevicornis*, described by him as " late rotundatum," " post obtusior," and " post rotundate triangulum " respectively, are undoubtedly " acute," so that Budde-Lund's method of examination is open to suspicion. I am quite confident, therefore, that the specimens I describe from the type locality are Budde-Lund's *P. gracilis*.

## Note on the Genus Paraphiloscia Stebbing, 1900.

In his revision of the sub-family Spherilloninae (1904) Budde-Lund created the genus *Pseudophiloscia* to contain his *Philoscia gracilis* and *Ph. fragilis*. In a posthumous paper edited by Stebbing (1912) he suggests that *Paraphiloscia stenosoma* Stebbing (1900) belongs to the same genus, an opinion in which Stebbing, in a footnote, concurs. Stebbing, however, also points out that the name of his own genus *Paraphiloscia* (1900) must take priority over Budde-Lund's *Pseudophiloscia* (1904), and in agreement with this I here employ Stebbing's name instead of Budde-Lund's. In 1908 Verhoeff founded a new genus, which he christened *Paraphiloscia*, for *Ph. pyrenaica* Doll., *Ph. squamuligera* Kölb, and *Ph. apenninorum*, Verh. Verhoeff's name, however, is obviously a homonym of Stebbing's genus and must be abandoned.

## Family: LIGIIDAE.

### 8. Ligia exotica Roux.

This Isopod is very widely distributed on the shores of warmer seas (and even occasionally inland), and it is only surprising that it has not previously been recorded from Samoa. The specimens referred to here are from the Bishop Museum collection: Tutuila, Leone Road (Judd), 29.ix.1926.

### 9. Ligia perkinsi (Dollfus).

(Plate I, figs. 22–24.)

The distribution of this form is dealt with at the outset of this paper. I figure here the mandibles and the outer endite of the maxillula, to illustrate the point alluded to by me in a previous paper (1927).

*Distribution.*—Hawaiian Islands, Kauai, 6000 ft., Oloa, 2000 ft.

*Occurrence.*—Namua Island, Samoa. On rocks on shore, xi.1924.

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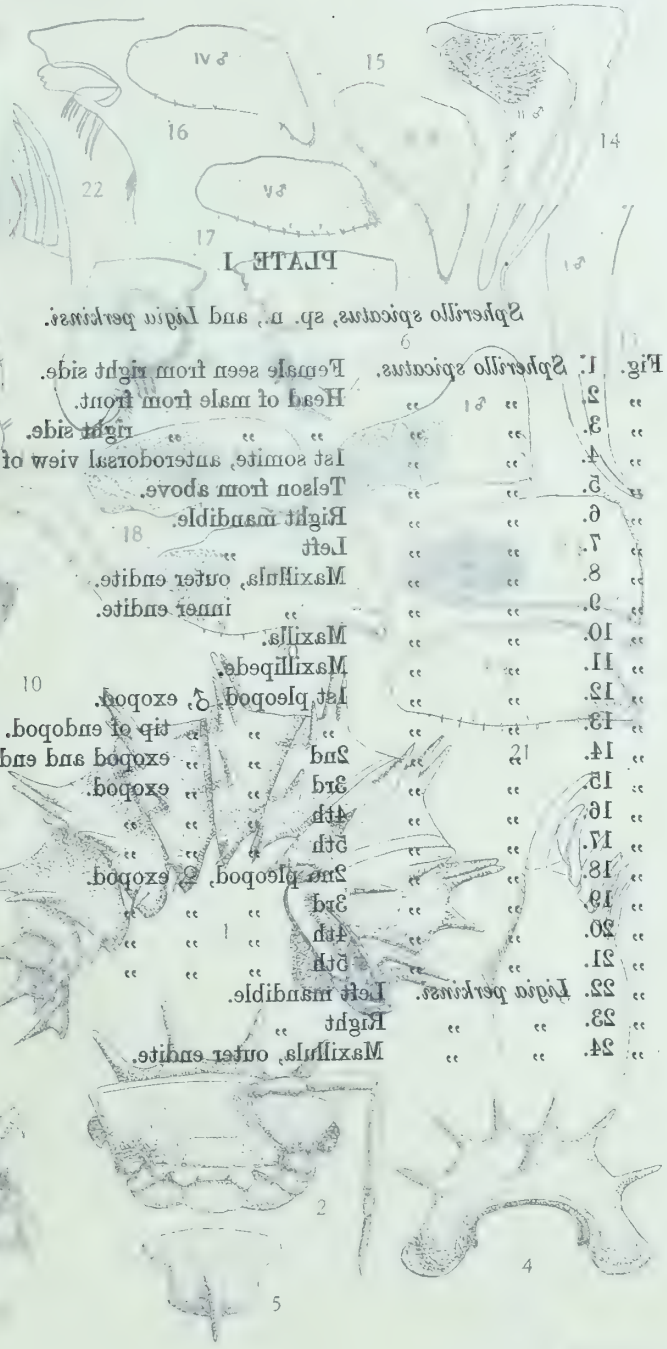


# PLATE I

*Sphaerillo spicatus*, sp. n., and *Ligia perkinsi*.

Fig. 1. *Sphaerillo spicatus*. Female seen from right side.
" 2. " " Head of male from front.
" 3. " " " " " right side.
" 4. " " 1st somite, anterodorsal view of tergite.
" 5. " " Telson from above.
" 6. " " Right mandible.
" 7. " " Left "
" 8. " " Maxillula, outer endite.
" 9. " " " inner endite.
" 10. " " Maxilla.
" 11. " " Maxilliped.
" 12. " " 1st pleopod, ♂, exopod.
" 13. " " " " tip of endopod.
" 14. " " 2nd " " exopod and endopod.
" 15. " " 3rd " " exopod.
" 16. " " 4th " " "
" 17. " " 5th " " "
" 18. " " 2nd pleopod, ♀, exopod.
" 19. " " 3rd " " "
" 20. " " 4th " " "
" 21. " " 5th " " "
" 22. *Ligia perkinsi*. Left mandible.
" 23. " " Right "
" 24. " " Maxillula, outer endite.



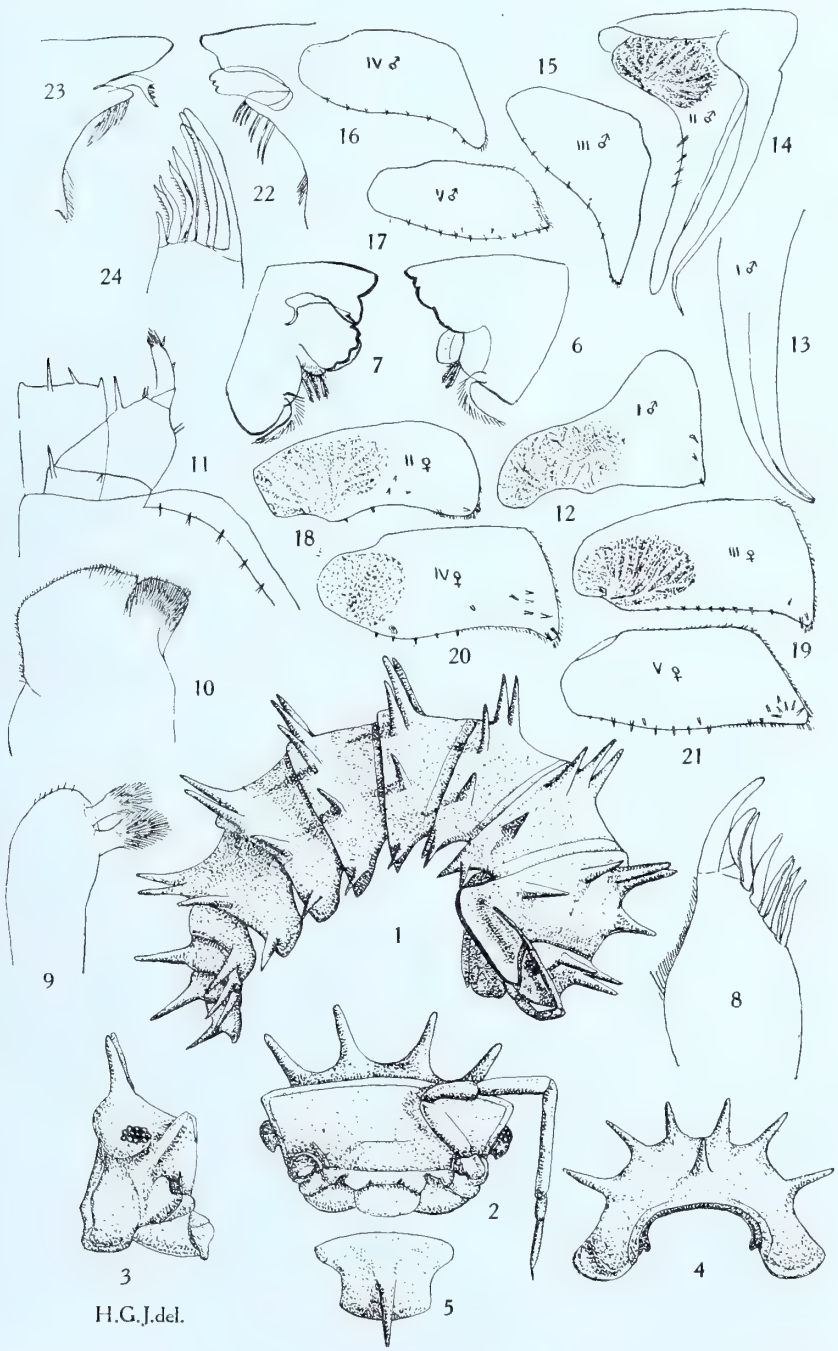
[*To face p.* 12.

SPHAERILLO SPICATUS (1–21): LIGIA PERKINSI (22–24).

## PLATE I.

*Spherillo spicatus*, sp. n., and *Ligia perkinsi*.

Fig. 1. *Spherillo spicatus*. Female seen from right side.
„ 2. „ „ Head of male from front.
„ 3. „ „ „ „ „ right side.
„ 4. „ „ 1st somite, anterodorsal view of tergite.
„ 5. „ „ Telson from above.
„ 6. „ „ Right mandible.
„ 7. „ „ Left „
„ 8. „ „ Maxillula, outer endite.
„ 9. „ „ „ inner endite.
„ 10. „ „ Maxilla.
„ 11. „ „ Maxillipede.
„ 12. „ „ 1st pleopod, ♂, exopod.
„ 13. „ „ „ „ „ tip of endopod.
„ 14. „ „ 2nd „ „ exopod and endopod.
„ 15. „ „ 3rd „ „ exopod.
„ 16. „ „ 4th „ „ „
„ 17. „ „ 5th „ „ „
„ 18. „ „ 2nd pleopod, ♀, exopod.
„ 19. „ „ 3rd „ „ „
„ 20. „ „ 4th „ „ „
„ 21. „ „ 5th „ „ „
„ 22. *Ligia perkinsi*. Left mandible.
„ 23. „ „ Right „
„ 24. „ „ Maxillula, outer endite.




PART VIII. PLATE I.

[*To face p.* 12.

SPHERILLO SPICATUS (1–21): LIGIA PERKINSI (22–24).

## PLATE II.

Spherillo spicatus and ♂ testudinalis; Alloniscus brevis; Paraphiloscia gracilis.

Fig. 25. Spherillo spicatus. Left uropod from above.
" 26. Spherillo testudinalis. Left mandible.
" 27. " " Maxilla.
" 28. " " Maxilliped.
" 29. " " 1st and 2nd thoracic tergites from side.
" 30. Alloniscus brevis. Antennula.
" 31. " Antenna.
" 32. " Maxilla.
" 33. " Maxilliped.
" 34. " Posterior somites of abdomen and telson.
" 35. " Pleopoda and uropoda of male from below.
" 36. " Pleopoda of female from below.
" 37. " Right mandible.
" 38. Paraphiloscia gracilis. Antennula.
" 39. " Right mandible.
" 40. " Left mandible.
" 41. " Maxillula, outer endite.
" 42. " " inner endite.
" 43. " Maxilliped.
" 44. " Telson.
" 45. " Left uropod from above.
" 46. " 1st pleopod, ♂, tip of endopod.
" 47. " Pleopoda, ♂, exopoda from below.
" 48. " Pleopoda, ♀, exopoda from below.
" 49. " Antenna.

H.G.J.del.

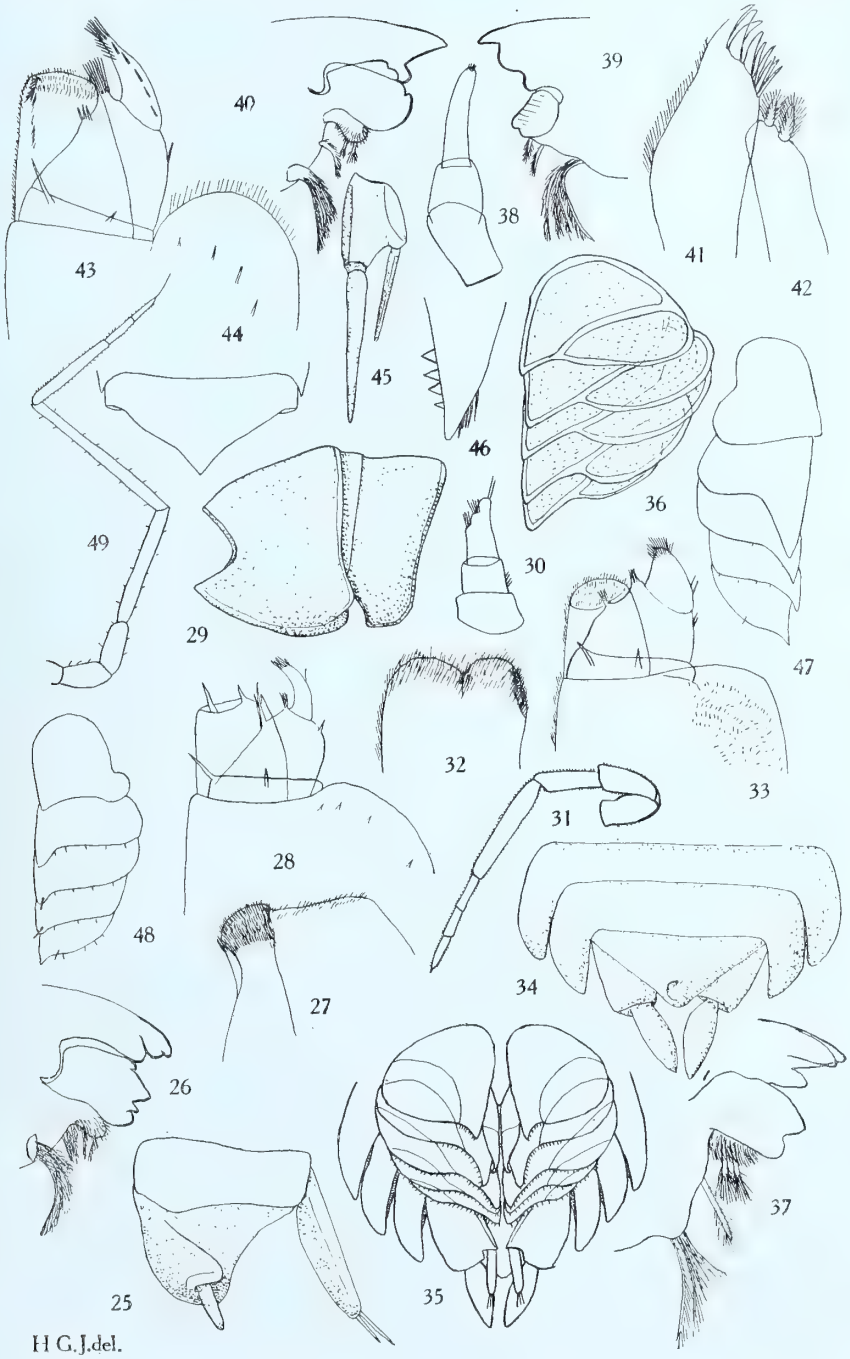
PART VIII. PLATE II.

SPHERILLO SPICATUS (25): S. TESTUDINALIS (26–29): ALLONISCUS BREVIS (30–37): PARAPHILOSCIA GRACILIS (38–49).

## PLATE II.

*Spherillo spicatus* and *S. testudinalis* ; *Alloniscus brevis* ; *Paraphiloscia gracilis*.

Fig. 25. *Spherillo spicatus*. Left uropod from above.
„ 26. *Spherillo testudinalis*. Left mandible.
„ 27. „ „ Maxilla.
„ 28. „ „ Maxillipede.
„ 29. „ „ 1st and 2nd thoracic tergites from side.
„ 30. *Alloniscus brevis*. Antennula.
„ 31. „ „ Antenna.
„ 32. „ „ Maxilla.
„ 33. „ „ Maxillipede.
„ 34. „ „ Posterior somites of abdomen and telson.
„ 35. „ „ Pleopoda and uropoda of male from below.
„ 36. „ „ Pleopoda of female from below.
„ 37. „ „ Right mandible.
„ 38. *Paraphiloscia gracilis*. Antennula.
„ 39. „ „ Right mandible.
„ 40. „ „ Left mandible.
„ 41. „ „ Maxillula, outer endite.
„ 42. „ „ „ inner endite.
„ 43. „ „ Maxillipede.
„ 44. „ „ Telson.
„ 45. „ „ Left uropod from above.
„ 46. „ „ 1st pleopod, ♂, tip of endopod.
„ 47. „ „ Pleopoda, ♂, exopods from below.
„ 48. „ „ Pleopoda, ♀, exopods from below.
„ 49. „ „ Antenna.

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PART VIII. PLATE II.

[*To face p.* 12.

SPHERILLO SPICATUS (25): S. TESTUDINALIS (26–29): ALLONISCUS BREVIS (30–37): PARAPHILOSCIA GRACILIS (38–49).

# SCORPIONOIDEA

By P. A. Buxton, M.A., London School of Hygiene and Tropical Medicine

The specimens of scorpions, which were collected by Mr. Hopkins and myself, had been determined by Mr. A. S. Hirst when the state of his health necessitated his abandoning his work at the British Museum. As he was prevented from writing an article, I have collected the facts which are here presented. It appears that the only two species of scorpion which were obtained in Samoa are widely distributed in the South Pacific; we do not know whether they have recently been spread by European ships, or by the earlier voyages of the Polynesians. Possibly they have crossed the Ocean by natural means, as specimens of both species occur under the bark of dead trees. We never heard of anyone being stung by either.

Mr. Hirst's identifications are as follows:

### 1. Isometrus maculatus Geer.

Several specimens, from Apia, and its neighbourhood, 1924.

### 2. Harmurus australasiae (Fabr.).

A number of specimens, from various altitudes in Upolu from sea-level to nearly 2000 ft. at Malololelei; a specimen from the Ellice Islands (O'Connor, 1920). In Samoa this is the commoner of the two species. It was collected in Samoa in 1905 by Rechinger (see Kulezynski, *Denkschr. Math.—Naturwiss. Klasse K. Akad. Wissensch.* (Wien), 85. Bd., p. 411, 1910).

# PSEUDOSCORPIONES

Von A. Kästner, Leipzig

(Mit 11 Figuren)

Herr P. A. Buxton übergab mir sechs Exemplare von Pseudoskorpionen, die er auf Samoa gesammelt hatte, zur Bestimmung. Sie gehören vier Arten an, von denen zwei bisher unbekannt waren.

## Subordo : PANCTENODACTYLI Balzan.

### Familie : Chiridiidae.

#### 1. Cheiridium ferum Simon.

1 Exemplar, ♀, vi.1925, Apia, Upolu, Samoa Is. Diese Art war bis 1912 nur aus Europa und zwar Italien, Frankreich und der Südschweiz bekannt. Ellingsen fand sie zu seiner Überraschung 1912 in südafrikanischem Material. Wir können nun als weiteren aussereuropäischen Fundort Samoa hinzufügen. Es ist diese weite Verbreitung der Art sehr auffallend, da sie im Gegensatz zum nahe verwandten *Cheiridium museorum* Leach nicht in der Nähe menschlischer Wohnungen, sondern bisher immer im Freien gefunden worden ist. Dennoch können Zweifel an der Übereinstimmung des samoanischen Exemplars mit den europäischen nicht bestehen, denn sowohl die Gestalt der Palpenglieder wie die Form der Galea, die With näher beschreibt, ist ganz die gleiche wie bei den europäischen Exemplaren.

### Familie : Garypidae Hansen.

#### 2. Garypinus oceanicus With.

1 Exemplar, ♀, xi.1925, Mulifanua, Upolu, Samoa Is. Dieselbe Art ist auf Funafuti von Professor Sollas gefunden, und von Pocock als *Olpium longiventer* Keyserling beschrieben worden.

Familie : Cheliferidae Hagen.

### 3. Chelifer atrimanus, n. sp.

1 Exemplar, wahrscheinlich ein ♀, vii.1924, Malololelei, Upolu, Samoa, 2000 ft. Die Beschreibung des Tieres folgt am Ende der Artenliste.

### 4. Chelifer buxtoni, n. sp.

3 Exemplare, davon eins mit Eisäckchen und ein junges Tier, 4.v.1924, Malololelei, Upolu, Samoa, 2000 ft. : "From bats' dung in cave." Beschreibung im folgenden Teil.

## BESCHREIBUNG DER NEUEN ARTEN

Die Beschreibungen habe ich den Arbeiten des ausgezeichneten Arachnologen With möglichst angeglichen, weil ich glaubte dadurch ihre Brauchbarkeit zu erhöhen. Alle Messungen sind also wie bei diesem zu verstehen. Der Palpentrochanter wird an der Vorderseite, Palpenfemur und Palpentibia dagegen werden an der Hinterseite gemessen. Die Palpenhand wird an der Unterseite gemessen, und zwar wie alle Glieder von dem Ursprung an (also einschliesslich Stiel) bis zum Gelenk des beweglichen Fingers (s. Fig. 9). Die in Klammern gesetzten Zahlen geben die Breite des Gliedes an seiner dicksten Stelle an. Die Beinglieder werden am oberen Rande gemessen (s. Fig. 5). Die Verhältnisse von Länge und Breite der Glieder geben oft gute Unterlagen zur Artbestimmung. Solche Proportionen sind immer bis zur ersten Dezimale berechnet. Man bedenke dabei aber, dass schon unbedeutende Abweichnungen beim Messen (die oft durch unscharfe Enden der Glieder entstehen) die Dezimalzahl ändern können. Findet man also an einem Tier als Verhältnis von Femurlänge zur Femurbreite 2,07, so gehört dieses Tier trotzdem noch zu *Chelifer atrimanus* n. sp., bei dem das Verhältnis 2,1 sein soll. Die Masse des Cephalothorax gelten nur für das Rückenschild desselben. Die Granulation der Palpen ist an leicht abgetrockneten Exemplaren bei etwa 80facher Vergrösserung zu beurteilen.

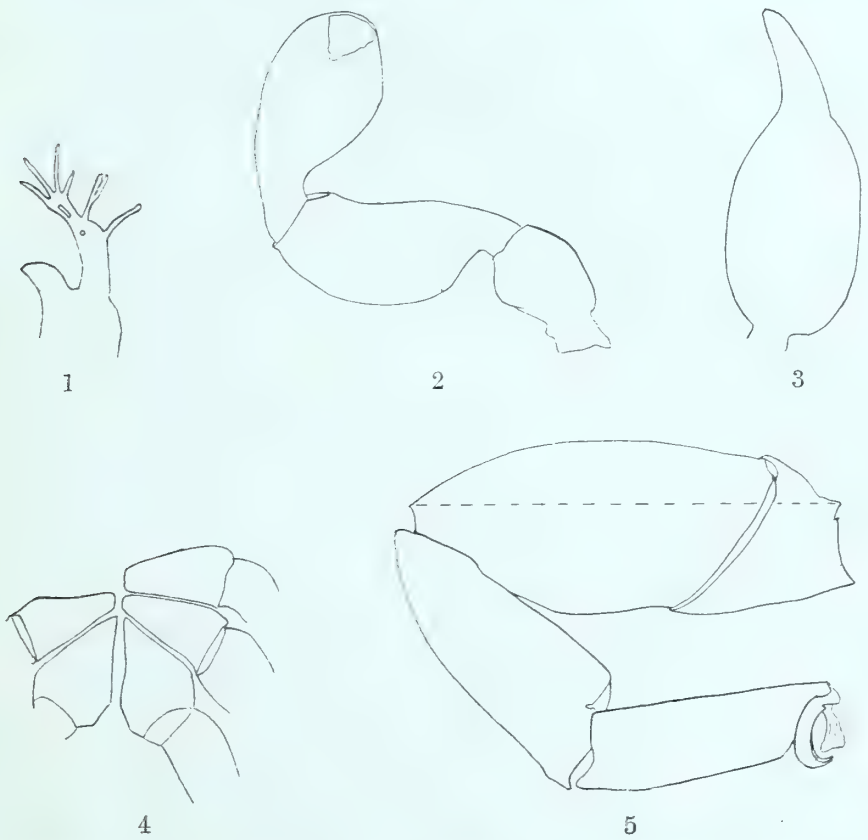
### Chelifer atrimanus, n. sp.

(Fig. 1–5.)

Diagnose.

Keine Augen, aber deutliche Augenflecke. Cephalothoraxschild in der Mitte breiter als am Hinterrande, ohne Querfurchen. Abdomen zemlich lang

und schmal. Cheliceren mit *Galea,* die mehr als 8 Äste nach verschiedenen Richtungen entsendet. *Pedipalpen* granuliert, mit ziemlich langen, am Ende spitzen Haaren besetzt. *Trochanter* mit einem deutlichen Höcker am oberen Rande der Hinterseite. *Femur* 2,1 mal so lang wie breit. Am basalen Ende




TEXT-FIG. 1–5, *Chelifer atrimanus* n. sp.—Fig. 1, Galea, von oben gesehen. Fig. 2, Trochanter, Femur und Tibia der linken Pedipalpe, von oben gesehen. Fig. 3, rechte Hand und unbeweglicher Finger, von oben gesehen. Fig. 4, die letzten drei Coxen der Beine. Fig. 5, das 1. Bein ohne Trochanter, von der Seite gesehen. Die gestrichelte Linie gibt an, wie die Glieder gemessen wurden.

plötzlich stark in den Stiel verschmälert, apical dagegen nur ein wenig schmäler werdend, und hier am Vorderrand ein wenig konkav ausgerandet. *Tibia* mit deutlichem Stiel, vorn sehr stark konvex, hinten nur sanft gebogen, ja am Anfang sogar gerade. 2,1 mal so lang wie breit. *Hand* 1,3 mal so breit und 1,1 mal so lang wie die Tibia. Ihre Höhe ist 1,1 mal so gross wie ihre Breite,

und ihre Länge 1,5 mal so gross wie der bewegliche Finger. Dieser ist 0,88 mal so lang wie die Hand hoch ist. Die *Finger* tragen accessorische Zähne, und zwar sind diese auf der Hinterseite über die ganze Länge des Fingers verstreut (auf jedem Finger 12), während sie sich an der Vorderseite nur am Ende des Fingers finden, und hier nie mehr als 3 vorkommen. Im beweglichen Finger ist sowohl eine Giftdrüse wie such deren Ausführgang deutlich wahrzunehmen. An der Basis des unbeweglichen Fingers stehen 16 "spots." 1. *Bein:* Tibia 1,2 mal so lang wie der Tarsus, der 3,1 mal so lang ist wie hoch. 4. *Bein:* Femur 2,3 mal so lang wie hoch, und 1,12 mal niedriger als der Tarsus lang ist.

### Beschreibung.

*Cephalothorax.*—Keine Augen, aber Augenflecke. Das Rückenschild ist deutlich länger als am Hinterrande breit. Eine Querfurche ist nicht vorhanden., indessen sind leichte Andeutungen einer solchen sichtbar, wenn man das Tier unter Flüssigkeit betrachtet.

*Abdomen.*—Ziemlich lang und schmal, ähnlich wie bei *Chelifer brevidigitatus* Keyserling. Die ersten 3 Tergite sind ungeteilt, bei dem 4. ist die Teilung undeutlich, während die übrigen durch eine Längslinie halbiert werden, mit Ausnahme des letzten. Die Sternite sind mit Ausnahme der letzten 4–5 wenig scharf von den umgebenden Gelenkhäuten abgehoben. Besonders die Sternite 2–5 sind ganz verschwommen angedeutet. Alle sind mit Ausnahme des letzten durch eine Längslinie wie die Tergite geteilt. (Bei den wenig ausgebildeten vorderen Sterniten lässt sich dies nicht sicher beurteilen.)

*Cheliceren.*—Die Galea besitzt einen ziemlich breiten Stamm, von dem mehr als 8 Zweige nach allen Richtungen ausgehen (Fig. 1). Die Zahl der Äste lässt sich nur schwer feststellen, mir schienen es 10 zu sein. Das Flagellum besteht aüs 3 Borsten, von denen die proximale am deutlichsten gezähnt ist.

*Pedipalpen.*—Die Palpen sind granuliert. (Bei 80-facher Vergrösserung klar zu erkennen.) Sie sind mit ziemlich langen, am Ende spitzen Haaren besetzt. Der *Trochanter* ist 1,7 mal so lang wie breit, und besitzt an dem hinteren Rande der Oberseite einen Höcker (Fig. 2). Das *Femur* ist 2,1 mal so lang wie breit. Sein Vorderrand ist apical ein wenig konkav ausgerandet. Der Hinterrand ist konvex und plötzlich zum Stielchen verschmälert (Fig. 2). Auch apical ist das Femur ein wenig verschmälert. Die *Tibia* ist 2,1 mal so lang wie breit. Ihre Vorderseite ist stark konvex, die Hinterseite dagegen nur mässig gebogen, am Anfange sogar gerade. Der

Stiel ist wohlausgebildet. Die Länge der Tibia ist 1,1 mal so gross wie die des Femur, ihre Breite beträgt das 1,1 fache der Femurbreite. Die *Hand* ist 1,1 mal so lang wie die Tibia, und 1,3 mal so breit wie diese. Ihre Höhe ist 1,1 mal so gross wie ihre Breite (Fig. 3). Der bewegliche Finger ist kürzer als die Hand (Hand : Finger = 3 : 2). Indes kann seine genaue Länge nicht gemessen werden, da er gebogen ist. Im beweglichen Finger ist eine Giftdrüse an aufgehellten Exemplaren deutlich zu sehen. Sie mündet mit einem schmalen Gang im Endzahne. An der Vorderseite der Finger finden sich an beiden Fingern die accessorischen Zähne nur in der Nähe der Spitze, und zwar am beweglichen Finger etwa 2, am unbeweglichen etwa 3. Im Gegensatz dazu ist die Hinterseite der Finger in ihrer ganzen Länge mit accessorischen Zähnen besetzt, so dass hier auf jedem Finger etwa 12 solche Zähne stehen. An der Vorderseite des unbeweglichen Fingers findet sich an der Basis eine Anhäufung von 16 " spots."

*Coxae.*—Siehe Fig. 4.

*Beine.*—Sie sind mit langen spitzen Haaren besetzt. Die Gelenkmembran zwischen dem Trochantin und dem Femur des 1. Beines ist nicht sehr weit. 1. *Bein :* Tibia 1,2 mal so lang wie der Tarsus, der 3,1 mal so lang ist wie hoch (Fig. 5). 4. *Bein :* Femur 2,3 mal so lang wie hoch und 1,12 mal niedriger als der Tarsus lang ist. Krallen einfach.

*Färbung.*—Cephalothorax ganz dunkelbraun. Maxillen heller braun, die übrigen Palpenglieder dunkelbraun wie der Cephalothorax, die Hand ganz dunkel, fast schwarz. Tergite dunkelbraun. Sternite 10 und 11 dunkelbraun, die anderen sehr hell, besonders die Sternite 2–4 unterscheiden sich kaum von den Gelenkhäuten durch ihre *Farbe.* Coxen der Beine gelbbraun.

*Masse.—Cephalothoraxschild* 0,950 (0,730 am Ende breit).

*Abdomen* 3,750 (etwa 1,2). Gesamtlänge des Tieres 4,750.

*Pedipalpen :* Trochanter 0,536 (0,333), Femur 0,870 (0,406), Tibia 0,943 (0,467), Hand 1,975 (0,618), hoch 0,731, Finger 0,650.

1. *Bein :* Femur 0,609 (0,249), Tibia 0,429 (0,157), Tarsus 0,336 (0,107).

4. *Bein :* Femur 0,845 (0,365), Tibia 0,652 (0,198), Tarsus 0,411 (0,132).

## Systematische Stellung der Art.

Bei flüchtiger Betrachtung schien das Tier ein Exemplar von *Chelifer javanus* Thorell zu sein. Die Färbung des Tieres passte ebenso wie die Gestalt der Palpen im allgemeinen auf dessen Diagnose. Indes unterscheidet sich die

eben beschriebene Art wesentlich von den Diagnosen die With über *Chelifer javanus* Thor. veröffentlicht hat durch folgende Merkmale :

1. Die Galea ist stark entwickelt, und besitzt mehr als 8 (etwa 10) Äste. Bei *Ch. javanus* ist sie nach With " fairly long and slender," und " seems to bear about six distal branches."

2. Bei unserer Art sind eine grosse Zahl accessorischer Zähne vorhanden.

In den ausgezeichneten Beschreibungen von With sind solche bei *Chelifer javanus* nicht erwähnt, sie sind also dort sicherlich nicht vorhanden.

Um die Stellung der Art innerhalb der australischen *Chelifer*-Species zu kennzeichnen, füge ich sie in die Bestimmungstabelle ein, die With in den *Ann. and Mag. of Nat. Hist.* VII, Vol. 15, 1905, veröffentlicht hat. Es muss dann Seite 97 am Ende der Tabelle heissen (nach Berücksichtigung v.S.328) :

a[17] Hairs of the tergites within a distinct white spot ; hand higher than broad, distinctly longer than fingers.—*C. punctatus* Keyserling.

b[17] Hairs not situated in distinct white spots.

a[18] Palpen braun. Galea entsendet weniger als 8 Zweige.—*C. brevidigitatus* Keys.

b[18] Palpen dunkelbraun, Hand fast schwarz. Die Galea entsendet mehr als 8 Zweige nach allen Richtungen. Auf der Hinterseite jedes Fingers sind mindestens 12 accessorische Zähne vorhanden.—*C. atrimanus*, n. sp.

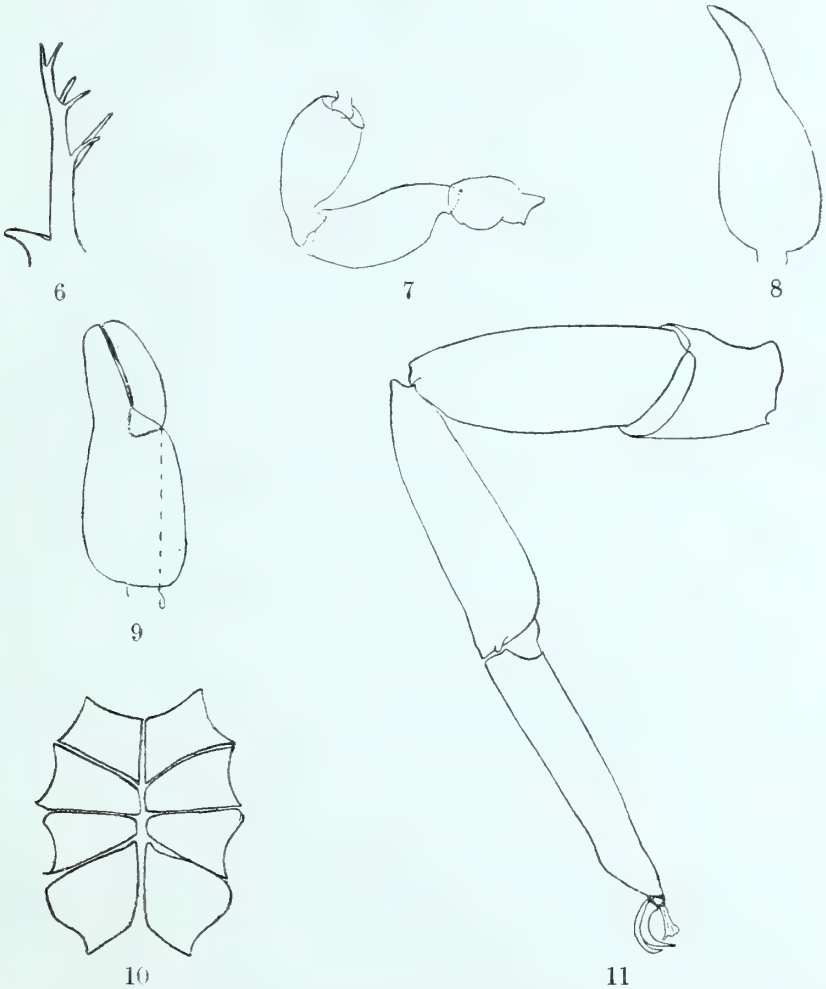
## Chelifer buxtoni, n. sp.

(Fig. 6–11.)

### Diagnose.

Keine Augen, aber deutliche Augenflecke. Cephalothoraxschild in der Mitte breiter als am Hinterrande, mit einer deutlichen Querfurche. Abdomen ziemlich lang und schmal. Cheliceren mit *Galea*, die etwa 6 Zweige nach aussen entsendet. *Pedipalpen* kaum granuliert, mit ziemlich langen, am Ende spitzen Haaren besetzt. *Trochanter* mit einem deutlichen Höcker am oberen Rande der Hinterseite. *Femur* 2,2 mal so lang wie an der breitesten Stelle dick. Am basalen Ende plötzlich stark in den Stiel verschmälert, apical dagegen nur wenig schmäler werdend, und hier am Vorderrand ein wenig konkav ausgerandet. *Tibia* mit deutlichem Stiel, vorn sehr stark konvex, hinten nur sanft gebogen, 2,1 mal so lang wie breit. *Hand* 1,4 mal so breit und 1,2 mal so lang wie die Tibia. Ihre Höbe ist 1,07 mal so gross wie ihre Breite, und ihre Länge 1,5 mal

so gross wie der bewegliche Finger. Dieser ist 1,2 mal so lang wie die Hand hoch ist. Die *Finger* tragen accessorische Zähne, und zwar sind diese auf der Hinterseite über die ganze Länge der Finger verstreut in einer Reihe von mehr




Text-fig. 6–11, *Chelifer buxtoni* n. sp.—Fig. 6, Galea, von oben gesehen. Fig. 7, Trochanter, Femur und Tibia der linken Pedipalpe, von oben gesehen. Fig. 8, rechte Hand und unbeweglicher Finger, von oben gesehen. Fig. 9, die linke Hand, von der Vorderseite gesehen. Die gestrichelte Linie gibt an, wie gemessen wurde. Fig. 10, die Beinhüften. Fig. 11, das l. Bein.

als 8 Zähnen. Auf der Vorderseite der Finger findet man dagegen nur an der Spitze einige wenige (meist 2) Zähne. Im beweglichen Finger ist an durchscheinenden Kanadabalsampräparaten eine Giftdrüse samt ihren Ausführungsgang zu beobachten. Der unbewegliche Finger trägt auf der Vorderseite an der

Basis eine Anhäufung von etwa 9 " spots," und etwa in der Mitte des Fingers noch eine Reihe von 3 " spots," zu denen noch ein 4. ausserhalb der Reihe stehender kommt. Der bewegliche Finger besitzt an der Basis der Vorderseite 4 " spots," und einen weiteren nahe der Mitte.

1. *Bein :* Tibia 1,13 mal so lang wie der Tarsus, der 5,3 mal so lang ist wie hoch. 4. *Bein :* Femur 2,5 mal so lang wie hoch und 1,8 mal niedriger als der Tarsus lang ist. Tasthaar nahe der Basis. Krallen einfach.

### Beschreibung.

*Cephalothorax.*—Keine Augen, aber Augenflecke. Das Rückenschild ist deutlich länger als am Hinterrande breit. Eine Querfurche verläuft hinter der Mitte über das Rückenschild, vom Vorderrande desselben 0,43 mm. entfernt.

*Abdomen.*—Ziemlich lang und schmal. Das erste und letzte Tergit ungeteilt, die übrigen durch einen Längsstreifen halbiert. Die Sternite sind mit Ausnahme der letzten 4 nicht deutlich von der umgebenden Gelenkhaut durch dunkle Färbung abgehoben. Sie sind mit Ausnahme des letzten und der Genitalsternite geteilt.

*Cheliceren* (Fig. 6).—Die Galea ist lang und besitzt etwa 6 Äste, die nach vorn und aussen gerichtet sind. Das vordere Haar des Flagellum ist scharf gezähnt. Flagellum mit 3 Borsten. Die distale Borste ist am stärksten gezähnt.

*Pedipalpen* (Fig. 7–9).—Die Glieder sind nicht deutlich granuliert. Sie sind mit einzelnen ziemlich langen und spitzen Borsten besetzt. Der *Trochanter* ist 1,6 mal so lang wie breit, und besitzt einen abgerundeten Höcker an dem Hinterrande der Oberseite. Das *Femur* ist 2,2 mal so lang wie breit. Sein Vorderrand ist apical ein wenig ausgerandet. Basal ist er plötzlich stark in den Stiel verschmälert, während es apical nur wenig an Breite abnimmt. Die *Tibia* ist 2,1 mal so lang wie breit, vorn stark und hinten wenig gebogen. Der Stiel ist deutlich ausgebildet. Die Länge der Tibia ist fast gleich der des Femur, Breite ist nicht einmal 1/10 grösser als die des Femur. Die *Hand* ist 1,2 mal so lang wie die Tibia, und 1,4 mal so breit wie diese. Ihre Höhe ist 1,07 mal so gross wie ihre Breite. Sie ist 1,5 mal so lang wie der bewegliche Finger. (Dessen genaue Länge kann nicht mikroskopisch gemessen werden, da er gebogen ist.) Im beweglichen *Finger* findet sich eine Giftdrüse, die in seinem Endzahne mündet. An der Vorderseite der Finger finden sich accessorische Zähne nur an der Spitze, und zwar an jedem Finger nur etwa 2. Im Gegensatz dazu ist die Hinterseite beider Finger mit einer langen Reihe von

mehr als 8 accessorischen Zähnen versehen. Die Vorderseite der Finger trägt mehrere " spots," die am besten in aufgehellten Präparaten sichtbar werden. So finden sich hier an der Basis des unbeweglichen Fingers 9 solche " spots " zu einer Gruppe vereinigt, 3 weitere bilden eine Längsreihe nahe der Mitte des Fingers, zu denen noch ein einzeln stehender kommt. Der bewegliche Finger besitzt an der Basis 4 " spots " und einen weiteren nahe der Mitte.

*Coxae.*—S. Fig. 10.

*Beine.*—Mit spitzen Haaren besetzt. Die Gelenkmembran zwischen Trochantin und Femur des 1. Beines liegt schräg, und ist ziemlich weit. 1. *Bein :* Tibia 1,03 mal so lang wie der Tarsus, der 5,3 mal so lang ist wie hoch (Fig. 10). 4. *Bein :* Femur 2,5 mal so lang wie hoch und 1,8 mal niedriger als der Tarsus lang ist. Nahe der Basis ein Tasthaar.

*Farbung.*—Cephalothorax hellbraun, Furche rotbraun. Pedipalpen braun, Hand und Finger dunkler. Tergite braun wie die Rückendecke des Cephalothorax. Sternite gelblich, nur die 3 letzten (manchmal auch die 4 letzten) deutlich braun. Coxae gelb, Maxillae nur ganz wenig dunkler.

*Masse.—Cephalothoraxschild* 0,79 (0,652), Furche 0,430 vom Vorderrande entfernt.

*Abdomen* 2,8 (3,75), ganzes Tier 3,5.

*Pedipalpen.*—Trochanter 0,356 (0,239), Femur 0,645 (0,290), Tibia 0,679 (0,309), Hand 0,808 (0,439), 0,447 hoch, Finger 0,523 lang. (In Wirklichkeit ist der Finger länger, indes kann man, da er gebogen ist, seine wirkliche Länge mikroskopisch nicht messen.)

1. *Bein :* Femur 0,533 (0,147), Tibia 0,422 (0,106), Tarsus 0,406 (0,076).

4. *Bein :* Femur 0,626 (0,249), Tibia 0,579 (0,147), Tarsus 0,457 (0,102).

*Systematische Stellung.*—Am sichersten lässt sich die Stellung der Art unter den anderen aus dem gleichen Erdteil bekannten *Chelifer*-Arten kennzeichen, wenn man sie in eine tabellarische Übersicht einreiht. Sie würde dann in der Bestimmungstabelle, die With von den australischen Arten gegeben hat, einzusetzen sein auf Seite 97 in die Abteilung $a^{14}$. Nach Einfügung unserer Art muss es hier heissen :

$a^{14}$ Fingers much shorter than hand ; ocular spots.

$a^{15}$ Femur about three times as long as broad ; tibia shorter than femur but as long as hand ; finger about as long as hand is high ; tactile hair perhaps wanting.—*Chelifer pallipes* White.*

* Die Fig., die With von dieser Art gibt, weicht in den Proportionen von der Beschreibung erheblich ab !

b[15] Femur less than two and a half times as long as broad; tibia a little longer than, or as long as femur, but always shorter than hand; finger half as long again as hand is high; tarsus IV with tactile hair near base.—*Chelifer buxtoni*, n. sp.

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## TEXT ZU DEN FIGUREN

Fig. 1. *Chelifer atrimanus* n. sp. Galea, von oben gesehen.
„ 2. *C. atrimanus* n. sp. Trochanter, Femur und Tibia der linken Pedipalpe, von oben gesehen.
„ 3. *C. atrimanus* n. sp. Rechte Hand und unbeweglicher Finger, von oben gesehen.
„ 4. *C. atrimanus* n. sp. Die letzten drei Coxen der Beine.
„ 5. *C. atrimanus* n. sp. Das 1. Bein ohne Trochanter, von der Seite gesehen. Die gestrichelte Linie gibt an, wie die Glieder gemessen wurden.
„ 6. *Chelifer buxtoni* n. sp. Galea, von oben gesehen.
„ 7. *C. buxtoni* n. sp. Trochanter, Femur und Tibia der linken Pedipalpe, von oben gesehen.
„ 8. *C. buxtoni* n. sp. Rechte Hand und unbeweglicher Finger, von oben gesehen.
„ 9. *C. buxtoni* n. sp. Die linke Hand, von der Vorderseite gesehen. Die gestrichelte Linie gibt an, wie gemessen wurde.
„ 10. *C. buxtoni* n. sp. Die Beinhüften.
„ 11. *C. buxtoni* n. sp. Das 1. Bein.

# ACARINA

## On a Gamasid mite (*Uropoda* (*Uroobovella*) *samoae*, sp. n.) occurring on the Termite *Calotermes* (*Glyptotermes*) *xantholabrum* Hill.

By Stanley Hirst

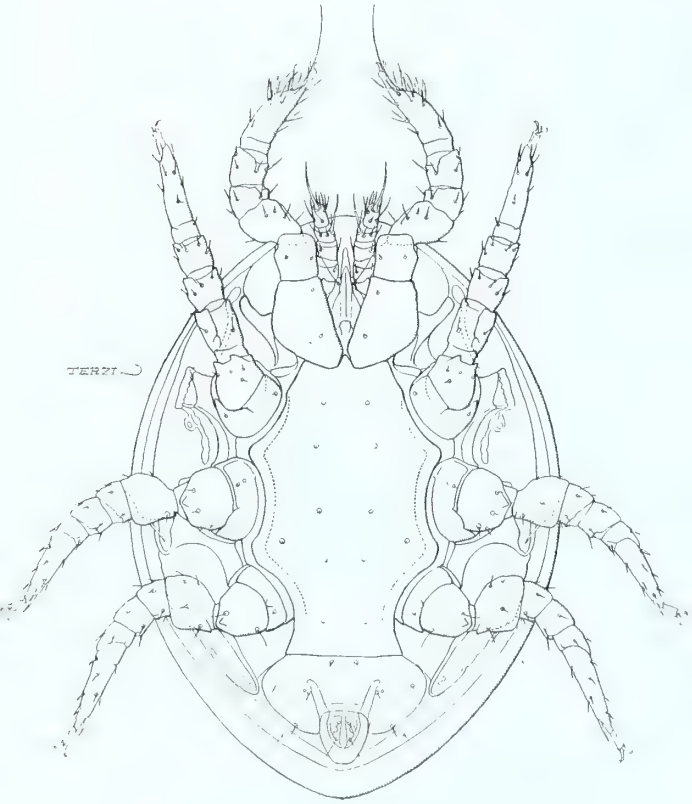
(With 2 Text-figures.)

### 1. Uropoda (Uroobovella) samoae, sp. n.

(Text-figs. 1 and 2.)

*Deutonymph.—Size* minute. Shape of *body* oval, being longer than wide. Posterior end of body bluntly pointed. *Dorsum* very strongly chitinised, smooth and without any trace of markings except minute scattered punctations. *Ventral plate* strongly chitinised, of moderate width and devoid of markings, except six pairs of very minute punctations. Anterior margin of this plate with a well-developed tooth-like process in the middle, which fits between the inner (anterior) margins of the first pair of coxae. *Anal plate* entirely separated off from the ventral plate and transversely elongated, being much wider than long; it bears six pairs of very short fine hairs, including two pairs on the valves. Anal aperture situated near posterior margin of plate, being placed on a little heart-shaped strip of chitin which seems to project backwards beyond the margin. *Peritremal tube* divided into several distinct portions (see fig. 1), but a short, straight, well-defined corrugated tube running between the second and third foveae is the most distinct part of it. Lateral *foveae* comma-shaped, consisting of a deep, rather bulbous-looking anterior depression, and a narrow, pointed, tail-like posterior portion. *Chelicerae* very long, the proximal part shows signs of segmentation, the fingers themselves are quite short and difficult to see. *Palp* short; penultimate segment with a pair of comparatively stout setae on its inner surface distally, and also with three sensory setae, each arising from a rather large circular base. Tarsus of palp with numerous hairs and also stiff rod-like

setae ; one of the sensory setae, which is longer than the rest, is thickened basally and rises from a large circular base. All the segments of the first *leg* have a thin, flattened extension, either of the antero-ventral or of the distal margin, especially noticeable in the case of the trochanter and the femur. Tarsus of first leg with pedicel and claws, but they are reduced in size ; this segment



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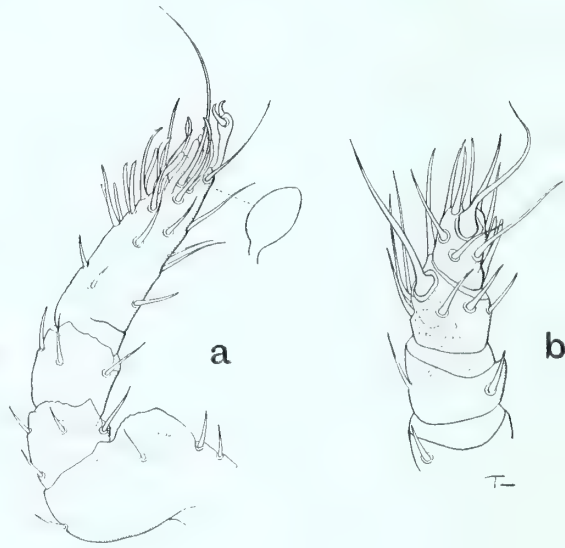


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Text-figs. 1, 2.—Fig. 1, *Uropoda* (*Uroobovella*) *samoae*, sp. n. Deutonymph. Ventral view. Fig. 2, *Uropoda* (*Uroobovella*) *samoae*, sp. n. Deutonymph. *a*, first leg; *b*, terminal segments of palp from below. Greatly magnified.

has numerous hairs and setae dorsally near the distal end, including a number of stiff, rod-like sensory setae, one of which is rather spatulate at the tip ; there is also an oval globular seta. Other legs chiefly furnished with spines and spiniform setae ; apparently none of the hairs are flattened, except a hair at the distal end of the posterior tarsi. Femora of legs each provided with a flattened projecting blade or lamina, sometimes accompanied by a proximal denticle.

*Length* of body 0·32 mm. ; its greatest width 0·24 mm.

*Habitat.*—Attached by anus (no distinct pedicel) to antennae of termite (*Calotermes* (*Glyptotermes*) *xantholabrum* Hill), Apia, Samoa, 31.i.1924, P. A. Buxton.

## LIST OF TEXT-FIGURES

Text-figure 1. *Uropoda* (*Uroobovella*) *samoae*, sp. n. Deutonymph. Ventral view.

Text-figure 2. *Uropoda* (*Uroobovella*) *samoae*, sp. n. Deutonymph. *a*, first leg ; *b*, terminal segments of palp from below. Greatly magnified.

Note.—It is regretted that no general collection of Acarina was undertaken by Mr. Hopkins and myself, and no other paper relating to this Order will be published.—P. A. Buxton.

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# INSECTS OF SAMOA
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